NOTES.

THE Bakerian lecture of the Royal Society will be delivered by Sir J. J. Thomson, O.M., F.R.S., on May 22, upon the subject of "Rays of Positive Electricity."

DR. GISBERT KAPP, professor of electrical engineering in the University of Birmingham, has been appointed president of Section G (Engineering) of the British Association for the meeting to be held in Birmingham in September next.

THE Georg Neumayer gold medal was bestowed upon Prof. L. A. Bauer, director of the department of terrestrial magnetism, Carnegie Institution of Washington, for his various researches in terrestrial magnetism, at the celebration of the eighty-fifth anniversary of the Berlin Gesellschaft für Erdkunde, on May 3.

THE Newcastle City Council has decided to invite the British Association to meet in Newcastle in 1916. A deputation consisting of the Lord Mayor (Alderman J. F. Weidner), the Sheriff (Mr. G. T. de Loriol), and Sir W. H. Stephenson was appointed at the meeting of the council on May 7 to present the invitation at the meeting of the association in Birmingham next September.

THE first Wilbur Wright memorial lecture will be delivered by Mr. Horace Darwin, F.R.S., at the Royal United Service Institution, Whitehall, on Wednesday, May 21, at 8.30 p.m., under the auspices of the Aëronautical Society, which has raised a fund for the annual delivery of a premium lecture in order to commemorate the work of Wilbur Wright, who, with his brother Orville Wright, evolved the first successful power-driven aëroplane which carried its pilot.

THE Walker prize, which is awarded by the Boston Society of Natural History once in five years, has been awarded this year to Mr. Robert Ridgway, of the United States National Museum, in recognition of his investigations in ornithology, and particularly for his work on the birds of North and Middle America. This prize, the amount of which is 200*l.*, was, says *Science*, founded by the late Mr. W. J. Walker, a benefactor of the society, and is given in recognition of important investigation in natural history published and made known in the United States of America.

THE death is reported, in his seventy-eighth year, of Mr. W. M. Fontaine, a leading American authority in fossil botany. A Virginian by birth, tracing his descent from a Huguenot family, he fought on the Confederate side in the Civil War. He was afterwards professor of chemistry and geology at the West Virginia University, and later held the chair of geology and natural history at the University of Virginia for thirty-three years, retiring in 1911 with a Carnegie pension. Prof. Fontaine took part in the second Pennsylvania Geological Survey, and at various times contributed reports to the U.S. Geological Survey.

THE latest ice reports contained in the meteorological chart of the North Atlantic Ocean for May, issued by the Deutsche Seewarte, state that in the vicinity of the Newfoundland Bank the drift ice, consisting of bergs and field ice, had greatly increased, and up to the third week in April had advanced southwards to nearly latitude 43° N., and eastwards to 41½° W. longitude. According to a report from St. John's (Newfoundland), at the end of March such a large amount of ice is seldom seen so early in the season. On the east coast of Cape Breton Island (Nova Scotia) much difficulty was caused to navigation. The conditions near Quebec had, however, much improved.

THE fifth general meeting of the Alchemical Society was held on Friday last, May 9, at the International Club, Regent Street, S.W. The chair was occupied by the honorary president, Prof. J. Ferguson, professor of chemistry in the University of Glasgow, and a paper by the Ven. Dr. J. B. Craven, Archdeacon of Orkney, was read, entitled "A Scottish Alchemist of the Seventeenth Century: David, Lord Balcarres." The author has been permitted to examine what remains of Balcarres's library, and has found therein a MS. translation of the famous "Fama Fraternitas," antedating the earliest published translations. The paper also contained particulars of other interesting MSS. in this library, and concluded with an old Fifeshire legend showing the fantastic views which were once held concerning the Rosicrucians.

ON Tuesday next, May 20, Prof. T. B. Wood will deliver the first of a course of three lectures at the Royal Institution on recent advances in the production and utilisation of wheat in England; on Thursday, May 22, Prof. W. J. Pope will begin a course of three lectures on recent chemical advances: (1) molecular architecture, (2) chemistry in space, (3) the structure of crystals; and on Saturday, May 24, Prof. Rutherford will commence a course of three lectures on radioactivity: (1) the α rays, (2) the origin of the β and γ rays, (3) the radio-active state of the earth and atmosphere. The Friday evening discourse on May 23 will be delivered by Prof. S. P. Thompson on the secret of the permanent magnet; on May 30 by Dr. Owen Seaman on parody; and on June 6 by Dr. Francis Ward on reflection and refraction of light as concealing and revealing factors in subaquatic life.

IT is proposed to celebrate the centenary of the foundation of the Indian Museum in Calcutta next February. Originally founded as a branch of the Asiatic Society of Bengal at the suggestion of Wallich, the botanist, on February 2, 1814, the Indian Museum became a Government institution in 1867, after prolonged negotiations with the Government of India, which accepted the society's collections to form the nucleus of an imperial museum in Calcutta. A strong centenary committee has been formed with his Excellency, Lord Carmichael, the Governor of Bengal, as chairman, and Sir Asutosh Mookerjee, Vice-Chancellor of the Calcutta University, as vice-chairman. The committee has decided to publish an official history of the museum, to raise a special fund for the improvement of the public galleries, and to hold a reception in the museum on the anniversary of its foundation.

IN connection with the Panama-Pacific International Exhibition to be held in San Francisco in 1915, a great display of horticulture is being arranged. The Horticultural Palace will provide an area of 207,000 sq. ft., and the building will be divided into three sections, namely tropical, semi-tropical, and temperate. In addition, about fifty acres will be reserved for outdoor nursery exhibits. The hall will be ready for the exhibits seven months before the opening of the exhibition, on February 20, 1915, and it is hoped that many of the plants will thus acquire the appearance of permanency before they are exposed to public inspection. In order to give extra novelty to the exhibition, the management offers a cup of the value of 1000 dollars for the best new seedling rose never previously exhibited. The rose which is awarded this prize will be named by the exhibition directors.

UNDER the title "Glorification de l'œuvre de Paul Schutzenberger," the *Revue Scientifique* of April 19 publishes a series of addresses delivered at the Ecole Municipale of Paris, on the occasion of the presentation to the city of Paris of a medallion, executed by M. Urbain, in commemoration of the life-work of the great chemist who was the organiser and first director of this famous school. Eulogies of Schutzenberger's purely scientific work were delivered by Profs. Haller, Noelting, and Matignon, whilst MM. Blondel, Lindet, and Scheurer dwelt on the very great influence he exerted on modern chemical industry by his investigations of the nature of dyes, and his discovery of hydrosulphurous acid and its application to indigo dyeing, which he effected in conjunction with M. de Lalande; the latter has within recent years led to the most important developments in the textile arts.

THE fine collection of Indian big-game heads and horns left to the nation at the close of last summer by the late Mr. A. O. Hume has been placed on exhibition as a special series on the walls of the second floor of the central hall of the Natural History Museum, above and near the statue of Sir Joseph Banks. Immediately over the statue are displayed the skulls of gaur, yak, and buffalo, while those of wild sheep occupy the wall immediately to the right, and those of ibex, wild goats, and markhor the corresponding position on the left. On the extreme right flank are displayed the blackbuck, chiru, gazelle, and nilgai heads, while on the left flank are arranged the serow, tahr, and takin. The wall to the left of the entrance to the upper mammal gallery is occupied by the magnificent series of deer antlers, while a portion of the wall facing the one behind the statue has been assigned to a few heads of African antelopes included in the collection. The exhibit adds a striking and attractive feature to the museum.

THE *Rassegna Contemporanea* (Anno vi., ser. ii., fasc. 6) contains an article on the date of the death of Christ by Pio Emanuelli. The Crucifixion took placed on the 14th day of Nisan, the first month of the Jewish year, and on a Friday. The month did not begin on the actual day of new moon, but on the evening when the thin sickle of the young moon was first perceived. The first problem to solve is therefore: How soon after the moment of new moon can the moon be seen? This has been investigated by Mr. J. K. Fotheringham, in the *Monthly Notices* for May, 1910, and by Mr. R. Courtenay, in *The Observatory* for June, 1911. The shortest possible interval after which the moon may be visible appears to be twenty-three hours, which, however, in certain circumstances may be considerably prolonged. Signor Emanuelli quotes these two papers, but does not give any particulars as to what he considers the smallest visible phase of the moon. He goes through the new moons nearest to the vernal equinox for the years A.D. 28 to 34 much in the same manner as done by Mr. Courtenay, and comes to the same result, that only A.D. 30, April 7, and A.D. 33, April 3, correspond to the 14th Nisan and also to a Friday. He decides for the year 30, as he says (without entering into explanaions) that historical criticism excludes the year 33.

IN the May issue of *Man* Mr. T. A. Joyce describes a fine gold beaker from Lambayeque, Peru, now in the collection of Mr. James Curle. The technique, representing a warrior with his shield, shows considerable skill. It is beaten out of a single sheet of metal, without any trace of a join. The outline is elegant and harmonious, and the lines of the design, in spite of its conventional nature, are bold and effective. It seems to belong to the period which immediately preceded the conquest of the coast by the Inca, a period of technical progress but artistic decadence.

IN *The Scientific American* of April 19, Mr. E. J. Banks gives an interesting account of recent German excavations in Babylonia. Attention was principally directed to the mound at Babylon known as the Kasr. Babylon, after all, turns out to be a comparatively modern city as compared with those to the south. The expedition has discovered a black monolith brought in ancient times as a war trophy from the Hittite city of Karchemish. Dr. Koldewey's chief discovery is that of the palace of Nebuchadnezzar on the Kasr, of which practically only the foundations remain. At Amran, again, 40 ft. below the surface, he has found Esagil, the famous temple of Babylon. At Assur, Dr. Andrae and his successor, Dr. Maresh, have traced the city walls and several ancient palaces and temples. Excavation is now in progress at Erech or Warka, the home of the hero of the Gilgamish epic. Here discoveries of the greatest scientific interest may be expected.

AN illustrated report (Research Bulletin 28) has been issued by the University of Wisconsin Agricultural Experiment Station on avian tuberculosis, the authors being Messrs. Hastings and Halpin. While not very frequent, the disease is of some economic importance. The authors were able to infect guinea-pigs, hogs, and rabbits with the avian, but were unable to infect hens with the human, tubercle bacillus. Suggestions are made for the elimination of the disease from the flocks.

IN the Journal of the Washington Academy of Sciences for March 19 (vol. iii., No. 6), Messrs. Ayers and Johnson detail experiments on the destruction of bacteria in milk by the ultra-violet rays generated by a quartz mercury-vapour lamp. When the milk was exposed in thin layers to the rays, a marked reduction in the bacterial content was obtained, but the experiments indicate that it would not be possible to sterilise milk completely by the ultra-violet rays. In some cases an abnormal disagreeable flavour was produced by the rays.

THE Alpine Club of Canada has set a good example to kindred bodies by publishing in *The Canadian Alpine Journal,* 1912, lists of the mammals (by Mr. N. Hollister), birds (by Mr. J. H. Riley), and plants (by Mr. P. C. Standley) of the Mount Robson district, Mr. Hollister also giving a note on the reptiles and amphibians.

WE have received the first five numbers of a new journal (or work), entitled *Java, Zoologisch en Biologisch,* by Dr. J. C. Konigsberger, published at Buitenzorg, the first number being dated 1911, and the other four 1912. Its object is apparently to give a general popular account of the leading features of the meteorology and fauna of the island, the fauna being divided into a coastal fauna, the fauna of the plains, and the fauna of the high mountains.

A RESTORATION and model of the skeleton of the gigantic carnivorous dinosaur Tyrannosaurus, from the Montana Cretaceous, form the subject of an article by Prof. H. F. Osborn in the Bull. Amer. Mus. Nat. Hist., vol. xxxii., pp. 91–92. Another paper on reptilian palæontology is to be found in the Annals of the Transvaal Museum, vol. iv., pp. 1–46, where Dr. E. C. N. van Hoepen describes and figures in great detail a remarkably fine skull of the Karroo dicynodont *Lystrosaurus* (*olim Ptychognathus*) *latirostris.*

THE *Aarsberetning* for 1912 indicates that the naturalists of the Bergen Museum have been engaged in arranging exhibition series to illustrate the osteology of vertebrates in somewhat the same fashion as those displayed in the hall of our own Natural History Museum, photographs of the new exhibits being included in the report. The work of the biological station has also been conducted with the usual energy; pictures and plans of a new vessel and a map of the hydrographical stations in the neighbourhood of Bergen accompany the report.

WE have received from the Government of India copies of three Forest Bulletins (Nos. 13–15), by Mr. R. S. Pearson, dealing respectively with "ligno" as a means of protecting timber from splitting while seasoning, with the strength of natural and plantation-grown teak, and with the technical properties of toon wood (*Cedrela toona*), and giving evidence of the enterprise and activity of the Imperial Forest Service officers at the Dehra Dun Institute of Forest Research. In No. 13, the author describes briefly the methods employed for seasoning timber, and some experiments made with "ligno"—a light-brown plastic substance of the consistency of thick paint which has been placed on the market recently. The application of this protective substance is based on the principle of retarding evaporation from cut ends of logs and thus preventing splitting; the result of the severe tests applied was that "ligno" was found to be very effective in retarding the seasoning process, though not absolutely preventing splitting. In No. 14 details are given showing that plantation-grown teak is as strong as that from natural forests; the figures for compression and shearing tests show that the percentage of moisture in the timber has no marked effect on the strength of teak, whereas it has a considerable effect when transverse strain is applied across the fibre. In No. 15 details are given showing that toon timber, after contracting considerably during seasoning, is very liable to absorb moisture and expand again when seasoned, this process of contraction and expansion continuing for several years, though becoming less marked in successive years; hence in order to prevent this excellent furniture timber from falling into disrepute it is only necessary to allow a longer time for seasoning.

THE Meteorological Chart of the North Pacific Ocean for May, published by the U.S. Weather Bureau, contains the concluding part of several articles on cyclonic storms and typhoons of that ocean by Mr. W. E. Hurd. They constitute a very useful summary of the subject, compiled from available sources, including quotations from Father Algué's valuable report on the cyclones of the Far East, and track charts for various months. It is pointed out in the Barometer Manual issued by the Meteorological Committee that the tracks of tropical storms of the North Pacific are very similar to those of the North Atlantic. "Typhoons of the China Sea originate to the eastward of the Philippines, Carolines, and Ladrones. In the lower latitudes the centres travel westward. Some pass over the mainland, some recurve to the eastward, and eventually reach the west coast of North America by way of Japan." Near the Philippines the rate of translation is from six to twelve miles an hour, but in the vicinity of Japan the speed is greatly increased. Since the establishment of telegraphic communication between the Philippines and the outlying islands the warning of approaching storms is very efficient. The "barocyclonometer," invented at the Manila Observatory, "for ascertaining the position, distance, and direction of advance of a cyclone," is both ingenious and important; it is said to be in general use among East Indian vessels.

A PAMPHLET of "Suggestions for Investigations in Human Geography in Britain" has been written by Dr. H. J. Fleure and Mr. W. E. Whitehouse, and is issued from the registrar's office in the University College of Wales, Aberystwyth. It claims for "human geography, the part of the subject which deals with man's relation to his physical environment," the status of "the main objective of geographical study." The authors' ideals of detailed local investigation on these lines are lofty and exhaustive: a list of no fewer than eighty suggested "sections for investigation" is laid down, and many of them, such as those involving philological and antiquarian research, would demand a special training, quite outside that afforded by geography alone, for the investigator. No doubt, however, in such departments as these it is the authors' desire to impress the geographical point of view upon the specialists in other departments of knowledge. The geographical application of the authors' suggestions is not always clear—some of the details instanced in connection with fairs may serve as examples—and again, the geographer who attempts to take up such a topic as the "prehuman" condition of a given district is certainly liable to disappointment at the results obtainable. On these counts the impression may be felt that the writers of this pamphlet have spread their net too widely. They appear (and they are not alone) to forget their own definition of human geography, which has been quoted above. But if this be a fault it is far better than that of taking too narrow a view, and the pamphlet, criticism apart, must be regarded as profoundly suggestive, and as having been worked out with very great care.

A party of students, under the direction of Prof. K. Honda, made some interesting simultaneous observations at different stations during August, 1912, on the seiches of Lake Inawasiro (Japan). The lake, which is near the well-known volcano Bandai, is about 12 km. long and 10 km. wide, and has a mean depth of 51½ metres. The limnimeters show that there were two oscillations of considerable amplitude with mean periods of 19·11 mins. and 8·89 mins., corresponding to the uninodal and binodal oscillations of the lake. A model of the lake was constructed, and the water in it was made to oscillate by means of a vibrating rod. The periods of the oscillations in the model correspond to periods of 19·53 and 9·11 minutes in the actual lake, while the forms of the nodal lines were clearly shown by means of aluminium powder with which the surface of the water was dusted.

A useful method of calculating the mean variation by the aid of a calculating machine is given by Prof. Knight Dunlap in the current number of *The Psychological Review*. If in a given series of N terms, with average M, P terms be greater and R terms be less than the average, then the mean variation may be calculated from either of the two formulæ,

$$\frac{\Sigma P - P.N}{\frac{N}{2}} \quad \text{or} \quad \frac{R.M - \Sigma R}{\frac{N}{2}}.$$

"By the use of the calculating machine, great accuracy may be obtained with the minimal expenditure of time and energy," if such methods as the above are followed, which dispense with the numerous subtractions of the older method.

From the report of the joint committee appointed by the Institution of Electrical Engineers, the Institution of Gas Engineers, the Institution of Municipal and County Engineers, and the Illuminating Engineering Society, on street lighting, with which Mr. Trotter opened the discussion of the subject at the last meeting of the Illuminating Engineers, and from the reports of the discussion which have appeared in the technical Press, it seems possible that the measurement of the minimum illumination of a plane 39 in. above the ground will eventually be accepted as the criterion of good or bad lighting of a street. The classification proposed by the committee is as follows:—Class A, minimum 0·01; B, 0·025, C, 0·04; D, 0·6; E, 0·10 foot-candle.

When a curve is drawn in the ordinary way to represent the effect of light upon a photographic plate, the part of it that represents the effect of the shortest exposures is exceptional in that it shows a gradation that is less steep than the part that follows it, and gradually approximates to it. This exceptional part was called by Messrs. Hurter and Driffield the "period of under-exposure," and plate-makers were advised to reduce it as much as possible, and photographers to avoid it. But this "period" cannot be eliminated, and therefore in practical work it remains, as it always has been, of very great importance, although Messrs. Hurter and Driffield dismissed it with but little consideration. After an interval of more than twenty years, Mr. F. F. Renwick, of Ilford, Ltd., has taken up the study of this particular period, and in the April number of the Journal of the Royal Photographic Society there is published a paper upon it that he recently communicated to the society. Mr. Renwick finds that the "under-exposure period" is not so disadvantageous as some theoreticians have endeavoured to prove it to be, and to a certain extent he justifies the practical workers who utilise it to the utmost. He shows the nature of this part of the density curve in many various plates and printing papers, giving full details, and points out that as the curve in printing papers is of the same general character as that in the negative, the gradation error of the latter is, more or less, compensated in printing.

To the *Revue générale des Sciences* of March 30 M. Ch. Maurain contributes an article on "Les Etudes d'Aérotechnique à l'Institut de St. Cyr." The recently founded aëronautical laboratory at St. Cyr differs fundamentally in its methods from that of almost all other existing institutions for aëronautical research, and its apparatus is designed for the purpose of "approaching as closely as possible to the practical conditions of aërial locomotion." By this is meant scientific experimental research on full-scale models at full speeds, and some work of a preliminary character on wing surfaces has already been accomplished. The work is being extended to experiments on large propellers, and provision is being made for the construction of a measuring apparatus sufficiently strong to be able to carry a complete aëroplane. The apparatus is mostly out in the open, and consists essentially of a track more than three-quarters of a mile in length, along which electrically-driven carriages can be run at speeds up to fifty miles per hour. The measuring apparatus is attached to the carriage, and during the eight or ten seconds in which the speed is maintained constant the forces and couples on the model under test are automatically recorded. Concurrently with these experiments, measurements are being obtained on aëroplanes in flight, and on small models held in a current of air. The latter experiments on small-scale models are expected to give information as to the conversion factors for scale which may become important as the science of aviation develops.

Red Book No. 173 of the British Fire Prevention Committee contains an account, with photographs, of tests on reinforced concrete doors. These doors were constructed to the designs of Commandant Welsch, ex-chief officer of the Ghent Fire Brigade. No. 1 door had a T iron rim and expanded metal and flat-iron reinforcement filled in with concrete; this door was hung on runners and made to slide, and was fixed on the outside of an opening. No. 2 door was similar to No. 1 door, but fixed on the inside of an opening. In No. 3 test two doors as described above were used, one on the inside and one on the outside of an opening. In No. 3 test, the doors were subjected to the action of a fire of 150 minutes' duration at temperatures gradually increasing to about 2000° F., followed by the application of water for two minutes on the fire side. In thirty-two minutes the outer face of the outer door was too hot to bear the hand, and in 140 minutes the lower half of the door had bulged outwards. In seventeen minutes cracks appeared all over the fire side of the inner door and continued to increase; in 107 minutes this door came away from the runner at one top corner; in 150 minutes the door fell forwards into the interior of the hut. On water being applied, the inner face of the outer door was eroded where struck by the jet. The tests afford some very useful lessons and give information which should lead to the design of an efficient fireproof reinforced concrete door.

The report of the council and the proceedings of the Hampstead Scientific Society for the year 1912 show that the work of the society, which was founded in 1899, not only expanded greatly during the year, but increased in value. It is hoped that during the present month the work "Hampstead Heath: its Geology and Natural History," prepared by members of the society, will be published. The Mayor and Borough Council of Hampstead have invited the South-Eastern Union of Scientific Societies to hold its annual congress at Hampstead this summer, and the meetings will be held from June 4 to 7. Thirty-two meetings were held during the year, besides six summer outdoor meetings and a course of four lectures to juveniles during the Christmas holidays. Among the list of lecturers during the year we notice the names of the president of the society, Prof. W. M. Flinders Petrie, and of Profs. A. Fowler and A. W. Porter. The report records a deficit on the general working of the society, due to the heavy expenditure involved in the maintenance of the meteorological station, which has now three years of unbroken meteorological records to its credit.

Among the most recent additions to the admirable series of "The People's Books," which Messrs. T. C. and E. C. Jack are publishing at 6*d*. net each, are three volumes dealing with subjects of science and technology. Dr. P. Phillips writes on the "Science of Light," and intends his book to be a companion to that on "Radiation," already published in the series. In between eighty and ninety small pages he deals with the propagation, reflection, refraction, dispersion, interference, and polarisation of light, and also explains diffraction and the electromagnetic nature of light waves. The treatment is necessarily slight, but the volume will prove useful even to students of physics, because of the outline history of the science which it contains. In a volume on "British Birds," Mr. F. B. Kirkman gives descriptions of 187 of the commoner species and their nests and eggs. Mr. A. W. Seaby has provided 111 illustrations, which, though small, give a good idea of the birds described. The third book is on "Gardening," and is by Mr. A. C. Bartlett, who has confined his attention to descriptions of the chief gardening operations and the propagation of plants by cuttings, grafting, budding, and other methods.

OUR ASTRONOMICAL COLUMN.

A New Faint Comet (1913*a*).—A Kiel telegram of date May 7 reports the discovery of a comet of magnitude 9·5 on May 6, at 15h. 5m. mean time, Nice, by M. Schaumasse, of the Nice Observatory. Its position when discovered was given as R.A. 20h. 54m. 44s., and declination +9° 52′, and it was moving in a north-easterly direction.

A Kiel circular of May 10 gives the following elements and ephemeris, computed by Kiess and Nicholson:—

$T =$ May 17·91 G.M.T.
$\omega = 57^\circ \cdot 28'$
$d = 317^\circ\ 0'$
$l = 26^\circ\ 26'$
$q = 1 \cdot 440$

	α			δ	
	h.	m.	s.	°	′
May 15	20	16	12	+19	0
„ 19	19	48	37	+24	13
„ 23	19	11	22	+30	7

The comet rises this evening about 9.20, and should be capable of being seen with telescopes of moderate power in the early morning hours.

The Physical Appearance of Mars.—It is well known that observers of the planet Mars are divided into two schools, one believing that the so-called canals are really long, continuous, and narrow streaks, the other looking upon them as the summation of a complexity of detail revealing irregular streaks and presenting frequent interruptions and condensations. In the current number of *Knowledge*, Mr. Antoniadi, a strong advocate of the latter view, communicates an interesting article on the subject of these Martian markings, and puts forward his explanation of the divergency of ideas of observers on their appearance. Large *versus* small aperture is his main reason; thus he writes:—"The student who passes many consecutive hours in the study of Mars with medium-sized instruments is liable to catch rare glimpses of straight lines, single or double, generally lasting about one-quarter of a second. Here we have a vindication of Schiaparelli's discoveries. But their deceitful character will obtrude itself on the observer using a large telescope, when, in the place of lines, he will behold steadily either a winding, knotted, irregular band, or the jagged edge of a half-tone, or some other complex detail." The article is illustrated by a fine set of drawings of the planet made in 1911, the observations being made with the 33-in. refractor of the Meudon Observatory.

The National Observatory of Athens.—Vol. vi. of the *Annales de l'Observatoire National d'Athènes* contains a series of valuable contributions published under the direction of Prof. Demetrius Eginitis, the director of the observatory. It is only possible here to state the titles of the memoirs and sets of observa-